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THE ORCHID FLORA OF THE NYIKA PLATEAU

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Abstract

A brief description of the Nyika Plateau is presented. The composition of the orchid flora is discussed. A check list is included with a cited specimen for each taxon and the habitat for each species is indicated.

Uittreksel

DIE ORGIDEË-FLORA VAN DIE NYIKA-PLATO

'n Kort beskrywing van die Nyika-plato word gegee. Die samestelling van die Orgideë-flora word bespreek. 'n Kontrolelys word ingesluit met 'n eksemplaar vir elke taksa aangeteken. Die habitat vir elke soort is aangedui.

Introduction

The Nyika Plateau is situated in South Central Africa close to the northern tip of Lake Malawi. It straddles the borders of Zambia and Malawi, lying approximately 10° 21′ and 11° 00′ latitude south and 33° 35′ and 34° 00′ longitude east of Greenwich. The plateau is a western shoulder of the Lake Malawi rift valley formed during the period of earth movements when the Great African Rift Valley was formed. It is very roughly ovoid in shape with a north east extension. The plateau plus the surrounding upland woodland covers an area of approximately 625 sq. km. Legislation includes a protected area within a proclaimed national park of all land above the 1 650 m contour line.

At the transition zone between the wet upland woodlands and the high plateau are found scattered *Brachystegia* woodland elements with occasional secondary montane forest intrusions. Depending on drainage and soil characters, loose *Uapaca-Protea-Phillipia* woodland merging into grassland is frequently encountered. As the altitude increases, the existence of the lower woodland becomes less evident until the pure montane vegetation belt is reached.

The true plateau begins at an altitude of approximately 1 950 m. In this high zone, which is over 2 100 m, exist wide open stretches of montane grassland interspersed with a mosaic of perennial peat bog seepages and dense stands of montane mist forest in the crotches of valleys and on badly drained slopes. Occasionally large high granite or resistant quartzite outcrops rise above the grassland. Over a long period of time organic matter has collected in saucer depressions and deep cracks forming small peat mat seepages on the surfaces of these expansive rock slabs.

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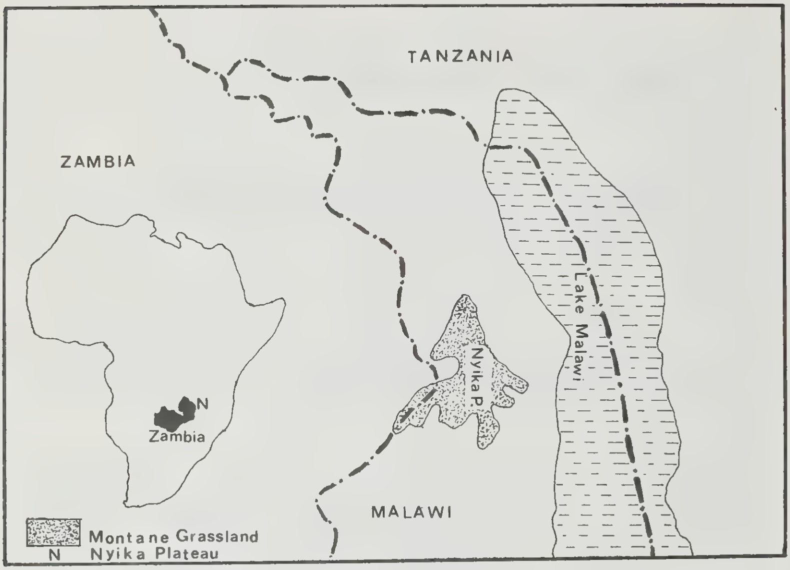

Locality of the Nyika Plateau showing the extent of the high montane grasslands. (From *Flora Zambesiaca*).

Spectacular rapids and waterfalls are formed where streams cut through the rim of the plateau. The effective humidity in some of these gorges is especially high allowing for very favourable habitat conditions for the growth of epiphytic plants.

The highest points on the plateau are Nganda, 2 520 m in the north and Kasaramba, 2 460 m in the south east. The forest on Kasaramba is extremely wet, receiving in excess of 187 mm of rain annually and has yielded numerous interesting epiphytes including an endemic orchid genus.

The climate of the plateau is mild and moist with the mean annual maximum temperature in the region of 18,5° C and with a mean annual minimum temperature of approximately 9° C. Low lying areas on the central plateau are often frosted in winter. The whole plateau receives in excess of 140 mm of rain annually. The highest recorded moisture condensation is on the eastern rim where up to 187 mm falls. In the adjacent *Brachystegia* woodlands below the true plateau the annual rainfall fades to 100 mm.

Large herds of game animals, eland, zebra and roan are resident permanently on the plateau but to date do not interfere with the orchid flora.

The soils on the plateau are mainly acidic with the pH ranging from 4 to 5,5, (Williamson samples collected 1968 analysed by Mount Makulu Research Station, Lusaka).

The Orchid Flora

The orchid flora of the high plateau including the adjacent woodlands comprises of 29 genera including some 148 species of which 30 species are ephiphytic. The largest genera are *Habenaria* (33 spp.), *Satyrium* (19 spp.), *Disa* (18 spp.) *Eulophia* (11 spp.) and *Disperis* (7 spp.).

The main affinities lie with the East African Montane and Upland orchid floras. The Nyika by virtue of its geographic position is also a link between the Southern and Northern Afro-montane orchid floras; thus there is considerable overlap with species that occur in the Southern Malawi Highlands, the Rhodesian Eastern Districts and even the South African Drakensberg. Due to a long isolation in time there are also some endemics. Approximately 18 forms of life are thought to be endemic including one genus and 6 species of orchids.

The epiphytic genera *Bulbophyllum, Polystachya, Microcoelia, Diaphananthe* and *Aërangis* which occur mainly in Central Tropical Africa are very poorly represented. Similarly the species from the dry Savanna regions are very low in number.

The montane grassland receives such a high level of moisture condensation that species which normally occur in perennial wet bog at lower altitudes thrive in the open Nyika grasslands. A few species which only occur in shaded woodland at lower altitudes also grow in the drier areas of the montane grassland.

Check List of Orchidaceae Occurring on the Nyika Plateau and Adjacent Woodland

Cited specimens

The collectors' names have been abbreviated as follows:

B M &S	R. Brummitt, Munthali & Synge
G & R	R. Grosvenor and Renz
H	W. D. Holmes
M	A. Moriarty
P	J. Pawek
R	M. Richards
W	G. Williamson
W B & S	G. Williamson, J. S. Ball & B. K. Simon
W & O	G. Williamson & A. Odgers

Herbarium abbreviations are according to the *Index Herbariorum* (Lanjouw and Stafleu, 1964).

The key to the habitats is as follows:

B	perennial wet peat bog seepage on plateau
E	epiphytic
F	montane mist forest
G	dry montane grassland
S	rock seepage on plateau
U	occurring in the adjacent upland *Brachystegia* woodland
W G	wet montane grassland

Subfamily: **ORCHIDOIDEAE**

Tribe: **ORCHIDEAE**

Subtribe: ORCHIDINAE

Holthrix Lindl.		
H. papillosa Summerh.	W & O 265 (K; SRGH)	G
H. pleistodactyla Kraenzl.	W 395 (K; SRGH)	G
H. tridactylites Summerh.	W 394 (K; SRGH)	G
H. buchananii Schltr.	P 2146 (K)	G
H. puberula Rendle	P 13716 (K)	U
Neobolusia Schltr.		
N. stolzii Schltr.	W & O 278 (K; SRGH)	W G
Schwartzkopffia Kraenzl.		
S. lastii (Rolfe) Schltr.	W 2100 (SRGH)	U
Brachycorythis Lindl.		
B. rhodostachys (Schltr.) Summerh.	W 207 (K)	B
B. tenuior Rchb.f.	W B & S 376 (K)	U
B. pleistophylla Rchb.f. subsp. pleistophylla Summerh.	W 128 (K; SRGH)	U G
Schizochilus Sand.		
S. sulphureus Schltr.	W B & S 802 (SRGH)	W G S
Cynorkis Thou.		
C. anacamptoides Kraenzl. var. anacamptoides	W 127	B
C. anacamptoides Kraenzl. var. ecalcarata Cribb	W 233 (K; SRGH)	B
C. kassnerana Kraenzl. subsp. kassnerana	W & O 286 (K; SRGH)	F
C. hanningtonii Rolfe	W 830 (SRGH)	F
Habenaria Willd.		
Sect. Chlorinae		
H. filicornis Lindl.	W B & S 796 (SRGH)	W G
H. xanthochlora Schltr.	W & O 266 (K; SRGH)	G
H. tenuispica Rendle	W 235 (K)	B

Sect. Pseudoperistylus		
H. petitiana (Rich.) TH. Dur. & Schinz.	W & O 288 (K)	F
Sect. Multipartitae		
H. praestans Rendle	W B & S 806 (SRGH)	verge F G
Sect. Trachypetalae		
H. trachypetala Kraenzl.	W & O 300 (SRGH)	U
Sect. Pentaceras		
H. pubidens Cribb	W & O 280 (K; SRGH)	F
H. parvifolia Summerh.	W B & S 374 (SRGH)	G
H. modica Summerh.	W B & S 364 (SRGH)	G
Sect. Replicatae		
H. williamsonii Cribb.	W & O 283 (K; SRGH)	G
H. kyimbilae Schltr.	W & O 275 (SRGH)	G
H. thomsonii Rchb.f.	W 944 (SRGH)	G
H. sp. (W & O 276) aff. thomsonii Rchb.f.	W & O 276 (SRGH)	G
H. Linderi Summerh.	W 944 (SRGH)	G
H. schimperana A. Rich.	W 945 (SRGH)	B
H. weberana Schltr.	W 2162 (SRGH)	G
H. sp. (G & R 1216)	G & R 1216 (SRGH)	G
H. leucoceras Schltr.	W 943 (SRGH)	G
H. sp. (G & R 1180) aff. humilior Rchb.f.	G & R 1180 (SRGH)	G
H. retinervis Summerh.	P 13710 (K; MO; MAL)	U
H. diselloides Schltr.	W 387 (K)	G
H. sp. nov. (W & O 273 = W 946)	W & O 273 (SRGH)	G
Sect. Ceratopetalae		
H. stenorhynchos Schltr.	W B & S 813 (SRGH)	B
H. cornuta Lindl.	W B & S 833 (SRGH)	G S
H. gonatosiphon Summerh.	M 35 (MAL)	B
H. clavata (Lindl.) Rchb.f.	W B & S 825 (SRGH)	G
H. sp. (W & O 292)	W & O 292 (K)	G
H. holubii Rolfe	P 13711 (K)	U
Sect. Kryptostoma		
H. goetzeana Kraenzl.	W B & S 378 (SRGH)	U
H. tentaculigera Rchb.f.	W B & S 819 (SRGH)	G
Sect. Diphyllae		
H. sp. (W B & S 375)	W B & S 375 (SRGH)	G
H. macrura Kraenzl	W B & S 814 (SRGH)	G
H. lithophila Schltr.	H 0234 (K; SRGH)	G
Platycoryne Rchb.f.		
P. protearum (Rchb.f.) Rolfe	W B & S 801 (SRGH)	R
Roeperocharis Rchb.f.		
R. wentzeliana Kraenzl.	W 897 (K; SRGH)	G WG
R. bennettiana Rchb.f.	W 902 (K; SRGH)	WG B
Centrostigma Schltr.		
C. sp. (E. Phillips in P 8092)	P 8092 (K; MAL)	B

Subtribe: DISINAE

Disa Berg.		
D. stolzii Schltr.	W 222 (K)	WG B

Disa erubescens Rendle	W B & S 793 (SRGH)	S B
D. zombica N.E. Br.	W & O 295 (K; SRGH)	W G
D. englerana Kraenzl.	W & O 281 (SRGH)	G
D. welwitschii Rchb.f.	W 226 (K)	B
D. celata Summerh.	W 232 (SRGH)	B
D. ochrostachya Rchb.f.	W 1040 (SRGH)	B W G
D. sp (W B & S 357)	W B & S 357 (SRGH)	G
Sect. Hircicornes		
D. robusta N.E. Br.	W 120 (K; SRGH)	G
D. sp.nov.	W 184 (SRGH)	B
D. hircicornis Rchb.f.	W B & S 821 (SRGH)	B
D. compta Summerh.	W 167 (SRGH)	B
Sect. Aconitoideae		
D. saxicola Schltr.	W B & S 803 (SRGH)	S E F
D. equestris Rchb.f.	W 151 (SRGH)	B
D. sp.nov.	W 223 (SRGH)	G
D. rungweëensis Schltr.	W B & S 363 (K; SRGH)	S
Sect. Herschelia		
D. longilobsis Schltr.	W 1041 (SRGH)	G
D. sp.nov.	W 1023 (SRGH)	G
Brownleea Lindl.		
B. parviflora Lindl.	W & O 294 (K; SRGH)	G

Subtribe: SATYRINAE

Satyrium Sw.		
Sect. Satyrium		
S. carsonii Rolfe	W B & S 828 (SRGH)	U
S. princeae Kraenzl.	W B & S 367 (K; SRGH)	R W G
S. orbiculare Rolfe	W B & S (SRGH)	U S
S. kitimboënse Kraenzl.	W B & S 840 (SRGH)	U
Sect. Leptocentrum		
S. crassicaule Rendle	W 239 (K; SRGH)	B
S. rhynchantoides Schltr.	W 243 (K; SRGH)	S
S. monadenum Schltr.	W 229 (K; SRGH)	W G
S. acutirostrum Summerh.	W & O 267 (K; SRGH)	G
S. neglectum Schltr.	W B & S 373 (K; SRGH)	G
S. buchananii Schltr.	W B & S 799 (SRGH)	W G
Sect. Chlorocorys		
S. sacculatum (Rendle) Rolfe	W B & S 359 (K; SRGH)	G
S. riparium Rchb.f.	W B & S 824 (SRGH)	G
S. chlorocorys Rolfe	W & O 298 (K; SRGH)	G
S. shirense Rolfe	W & O 264 (SRGH)	G
S. microcorys Schltr.	W & O 289 (K; SRGH)	W G
S. sphaeranthum Schltr.	W & O 297 (K; SRGH)	W G
Sect. Leucocomus		
S. trinerve Lindl.	W B & S 812 (SRGH)	B W G
S. amblyosaccos Schltr.	W B & S 358 (SRGH)	G
S. breve Rolfe	W 127 (SRGH)	B

Subtribe: CORYCIINAE

Disperis Sw.		
D. anthoceros Rchb.f. var. anthoceros	W & O 285 (SRGH)	F

Disperis nemorosa Rolfe	W & O 269 (K)	F
D. breviloba Verd.	W B & S 362 (SRGH)	G
D. aphylla Kraenzl.	W 888 (SRGH)	F
D. dicerochila Summerh.	W 919 (SRGH)	F
D. kilimanjarica Rendle	W 887 (SRGH)	F E

Tribe: **NEOTTIEAE**

Subtribe: ERYTHRODINAE

Epipactis Zimm.		
E. africana Rendle	B M & S 126 (K)	F

Tribe: **EPIDENDREAE**

Subtribe: LIPARIDINAE

Malaxis Sw.		
M. schliebenii (Mansf.) Summerh.	W 858 (K)	U
M. katangensis Summerh. var. katangensis	W 247 (K)	U
Liparis L.C. Rich.		
L. neglecta Schltr.	W B & S 847 (SRGH)	F
L. mulindana Schltr.	W B & S 377 (SRGH)	U

Subtribe: POLYSTACHYINAE

Polystachya Hook		
Sect. Caulescentes		
P. transvaalensis Schltr.	W 823 (SRGH)	F E
Sect. Affines		
P. malilaensis Schltr.	W 125 (SRGH)	F E
Sect. Superpositae		
P. fusiformis (Thou.) Lindl.	W B & S 842 (SRGH)	F U E
Stolzia Schltr.		
S. williamsonii Cribb	W B & S 370 (K)	F E
S. repens (Rolfe) Summerh.	W 237 (K; SRGH)	U E
S. compacta Cribb subsp. compacta	W B & S 371 (K; SRGH)	F E

Subtribe: BULBOPHYLLINAE

Bulbophyllum Thou.		
B. sandersonii (Oliv.) Rchb.F.	W B & S 845 (SRGH)	F U E
B. rugosibulbum Summerh.	W B & S 835 (SRGH)	U E
B. cochleatum Lindl.	W B & S 839 (SRGH)	F U E

Subtribe: NERVILINAE

Nervilia Commerson ex Gaud.		
N. pectinata Cribb (leaf only)	W 2102 (SRGH)	F

Tribe: **VANDAE**

Subtribe: CYRTOPODIINAE

Eulophia R. Br. ex Lindl.		
E. thomsonii Rolfe	W 148 (SRGH)	G
E. monticola Rolfe	R10399 (K; SRGH)	G
E. ovalis Lindl. subsp. bainsii (Rolfe) Hall	W 236 (SRGH)	G
E. odontoglossa Rchb.f.	W 1724 (SRGH)	G
E. ukingensis Schltr.	W B & S 366 (K; SRGH)	B
E. corallorhiziformis Schltr.	W 1042 (SRGH)	B
E. streptopetala Lindl.	W 1007 (SRGH)	F
E. coeloglossa Schltr.	W 1044 (SRGH)	B
E. cucullata (Afz. ex Sw.) Steud.	P 581 P 3261 (SRGH) ??	U
E. arenicola Schltr.	W 1039 (SRGH)	G (on rocks)

Subtribe: ANGRAECINAE

Angraecum Bory		
A. sacciferum Lindl.	H 088 (SRGH)	F E
A sp. (W B & S 385)	W B & S 385 (K)	F E
Holmesia Cribb		
H. parva Cribb	W B & S 383 (K)	F E

Subtribe: AËRANGIDINAE

Microcoelia Lindl.		
M. stolzii (Schltr.) Summerh.	W 2103 (SRGH)	F E
Mystacidium Lindl.		
M. tanganyikense Summerh.	W B & S 369 (SRGH)	F E
Diaphananthe Schltr.		
Sect. Rhipidoglossum		
D. pulchella Summerh.	W 238 (SRGH)	F U E
D. xanthopollinia (Rchb.f.) Schltr.	W 920 (SRGH)	U E
D. oxycentron Cribb	W B & S 381 (K)	F E
Bolusiella Schltr.		
B. iridifolia (Rolfe) Schltr. subsp. picea Cribb	W 1056 (K)	F E
Aërangis Rchb.f.		
A. sp. nov. (W 1094)	W 1094 (K)	F E
Rangaëris Summerh.		
R. musicola (Rchb.f.) Summerh.	W B & S 841 (SRGH)	U E (on rock)
Tridactyle Schltr.		
T. inaequilonga (De Wild.) Schltr.	W 123 (K; SRGH)	F E
T. tricuspis (Bolus) Schltr.	W & O 284 (K)	F E
T. sp. nov. (W 277)	W 277 (K; SRGH)	F E
T. critrina Cribb	W 230 (K; SRGH)	U E (On protea)
Cardiochilos Cribb		
C. williamsonii Cribb	W 388 (K)	F E

In addition to the above list the following orchids have been observed but not collected thus no voucher specimens exist.:
Disperis reichenbachiana Rchb.f. Chisenga Falls.
Polystachya holmesii Cribb. On trees below plateau.
Bulbophyllum mahonii Rolfe. Woodland close to park entrance.
B. buntingii Rendle. Woodland below plateau.
Nervilia humilis Schltr. Woodland below plateau.
N. adolphii Schltr. Chisenga Falls.
N. kotschyi (Rchb.f.) Schltr. Woodland near Chisenga Falls.
Tridactyle teretifolia Schltr. Woodland adjacent to Chisenga Falls.

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